



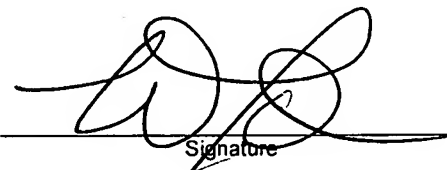
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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| PRE-APPEAL BRIEF REQUEST FOR REVIEW | | Docket Number (Optional) SON-2769 | |
|--|---|--------------------------------------|--|
| | Application Number 10/603,689-Conf. #2872 | Filed June 26, 2003 | |
| | First Named Inventor Hidetoshi Ohnuma | | |
| | Art Unit 1756 | Examiner D. C. Davis | |
| <p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant /inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>40,290/24,104</u></p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</p> <div style="text-align: right;"> _____ Signature <u>Christopher M. Tobin/Ronald P. Kananen</u> Typed or printed name <u>(202) 955-3750</u> Telephone number <u>January 9, 2008</u> Date</div> | | | |
| <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p> | | | |
| <p><input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.</p> | | | |



Docket No.: SON-2769
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Hidetoshi Ohnuma

Application No.: 10/603,689

Confirmation No.: 2872

Filed: June 26, 2003

Art Unit: 1756

For: EXPOSURE METHOD, MASK
FABRICATION METHOD, FABRICATION
METHOD OF SEMICONDUCTOR DEVICE
AND EXPOSURE APPARATUS

Examiner: D. C. Davis

REQUEST FOR PRE-APPEAL BRIEF PANEL REVIEW OF FINAL REJECTION

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is in full and timely response the non-final Office Action mailed on July 11, 2007.

The filing on August 9, 2007 of the Amendment After Final Action Under 37 C.F.R. 1.116, as the first reply to the Final Office Action, has been filed within 2 months of the date of the Final Office Action.

Pursuant to U.S. Patent and Trademark Office practice and procedures found within 706.07(f)(I), the time period for further response begins to run from the later of:

- three (3) months from the date of the final rejection, OR
- from the date of the advisory action.

Since no Advisory Action has been mailed at the present time, the filing of this Request For Pre-Appeal Brief Panel Review Of Final Rejection is believed to be timely. Filed along with this Request is a Notice of Appeal pursuant to 37 C.F.R. §41.31 accompanied by the fee set forth in 37 C.F.R. §41.20.

Paragraph 5 of the Office Action indicates a rejection of claims 25-26 under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent Application No. 2001/0055733 to Irie et al. (Irie) in view of U.S. Patent No. 6,593,037 to Gabriel et al. (Gabriel).

This rejection is traversed at least for the following reasons.

While not conceding the propriety of this rejection and order to advance the prosecution of the above-identified application, claims 25-26 have been canceled without prejudice or disclaimer of their underlying subject matter within Amendment After Final Action Under 37 C.F.R. 1.116 of August 9, 2007.

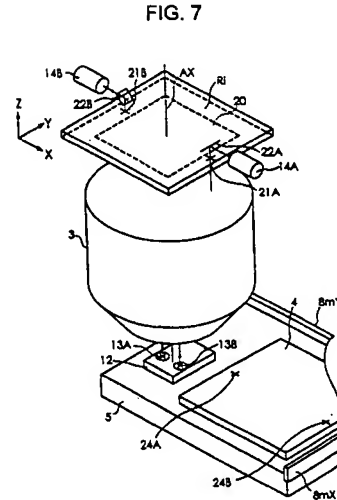
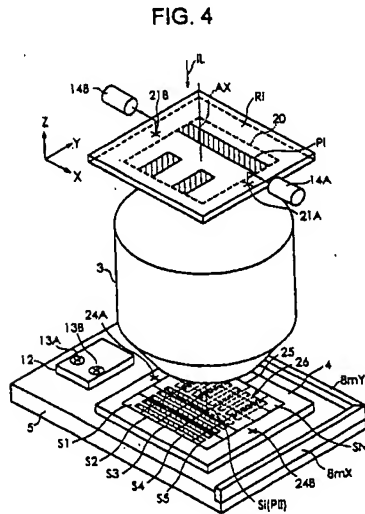
Paragraph 3 of the Office Action indicates a rejection of claims 31-38, 41-42 under 35 U.S.C. §102 as allegedly being anticipated by Irie.

Paragraph 6 of the Office Action indicates a rejection of claims 39-40 under 35 U.S.C. §103 as allegedly being unpatentable over Irie in view of Gabriel.

This rejection is traversed at least for the following reasons.

| | |
|---|---|
| <p style="text-align: center;">FIG. 1</p> <p>FIG. 1 consists of three parts: (a) shows a rectangular mask with two sets of parallel lines, labeled 11a and 11b, and a coordinate system with X, Y, and Z axes. (b) shows two rectangular masks, one with lines 11b and 12b, and another with lines 11a and 12a, with a coordinate system. (c) shows two circular wafers, labeled 8, with arrows indicating rotation.</p> | <p>Paragraph [0037] of U.S. Application Publication No. 2004/0029024, the publication document for the present application, provides that:</p> <p>Thereby, even if the irradiating object of the EUV ray is changed to the other reflective mask, namely to the H-line mask 12b, an angle of the pattern forming elements 11b of the H-line mask 12b and the projection vector of the EUV ray becomes equal to an angle of the pattern forming elements 11a of the V-line mask 12b and the projection vector of the EUV ray, wherein the exposure using the V-line mask 12b is finished in advance. Further, because the wafer 8 is also rotated by approximately 90 degrees, the projected image of the desired pattern is to be correctly formed on the wafer 8, even the H-line mask 12b is rotated by approximately 90 degrees when the mask is changed to the H-line mask 12b.</p> |
|---|---|

Irie - **Irie** arguably teaches an exposure method and exposure apparatus. Figures 4 and 7 of **Irie** are provided hereinbelow.



Irie arguably teaches the presence of a master pattern 27 of the working reticle 34 (**Irie** at Figure 6, paragraph [0110]). **Irie** arguably teaches the presence of a parent pattern 36 (**Irie** at Figure 6, paragraph [0112]).

Irie arguably teaches the presence of illumination light IL and alignment marks 21A and 21B (**Irie** at Figure 4).

The Final Office Action **concedes** that **Irie fails** to disclose, teach, or suggest the reflection type mask as having an absorption film formed thereon (Final Office Action at page 8).

Nevertheless, **Irie** arguably teaches that in an exposure apparatus using EUV rays, however, a reflection type mask is used, while in a proximity type X ray exposure apparatus or electron beam exposure apparatus etc., a transmission type mask (stencil mask, membrane mask) is used, so a silicon wafer etc. is used as the master of the mask (**Irie** at paragraph [0161]).

- **However, *Irie fails to disclose, teach, or suggest that the illumination light IL light is projected along a projection vector in a projection direction, that the first direction is alignable in the projection direction, and that the direction other than the first direction is alignable in the projection direction.***

The Final Office Action asserts the presence of X-direction elements, i.e., H-line mask rotated about 90 degrees to align (said direction alignable in the projection direction) in the projection beam (Final Office Action at page 5).

In response, the filters Fj within Figure 1 of Irie may be provided in a one-to-one correspondence with the reticles Ri, but use of the same density filter Fj for exposure of several reticles Ri enables the number of the density filters Fj to be reduced and is more efficient (Irie at Figure 1, paragraph [0080]).

Further, the exposure light IL emitted from the illumination optical system 1 illuminates part of a master reticle Ri held on the reticle stage 2 (Irie at Figure 1, paragraph [0084]). The reticle stage 2 holds the i-th (i=1 to N) master reticle Ri (Irie at Figure 1, paragraph [0084]).

- ***Here, Irie teaches the density filter Fj as something other than the master reticle Ri.***

Irie arguably teaches that if the density filters Fj are made able to be used rotated 90 degrees or 180 degrees, by preparing for example the three types of density filters Fj of Figure 3A, Figure 3B, and Figure 3E, it is possible to realize the functions of the other density filters and the efficiency is greater (Irie at Figure 1, paragraph [0080]).

When aligning a master reticle Ri, the substrate stage 6 of Figure 1 is driven to position the fiducial marks 13A and 13B so that the center point between the fiducial marks 131 and 13B on the fiducial mark member 12 substantially registers with the optical axis AX of the projection optical system 3 as shown in Figure 7 (Irie at paragraph [Yet, no rotation of the sample table 5 is described within Irie.

Moreover, no rotation of the master reticle Ri is described within Irie.

- ***Thus, Irie fails to disclose, teach or suggest a method:***

wherein said light is projected along a projection vector in a projection direction,

wherein said first direction is alignable in said projection direction, and

wherein said direction other than said first direction is alignable in said projection direction.0119)).

Gabriel - Gabriel arguably teaches an EUV mask or reticle having an absorptive mask 18, 108, 208, 308 (Gabriel at Figures). For example, Figure 4 of Gabriel is provided hereinbelow.

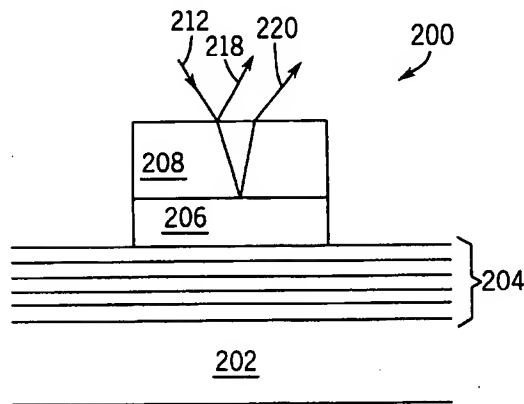


FIG. 4

- However, Gabriel fails to disclose, teach or suggest a method:

wherein said light is projected along a projection vector in a projection direction,

wherein said first direction is alignable in said projection direction, and

wherein said direction other than said first direction is alignable in said projection direction.

Withdrawal of this rejection and allowance of the claims is respectfully requested.

Dated: January 9, 2008

Respectfully submitted,

By

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